

NOTES ON AUSTRALIAN VERRUCARIACEAE (LICHENISED ASCOMYCOTINA). 4. *POLYBLASTIA* Massal.

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ABSTRACT

McCarthy, P.M. Notes on Australian Verrucariaceae (lichenised Ascomycotina). 4. *Polyblastia* Massal. *Muelleria* 8(3): 269–273 (1995). — *Polyblastia australis* sp. nov. is described from northern Tasmania where it grows on calcareous soil and moribund bryophytes. The aquatic *P. cruenta* (Körber) P. James & Swinscow and the calcicolous *P. dermatodes* Massal. are also reported from Tasmania.

INTRODUCTION

Polyblastia Massal. is a genus of mainly saxicolous, temperate to arctic-alpine lichens characterised by colourless to dark brown, submuriform to muriform ascospores. It is closely related to *Staurothele* Norman which produces hymenial algae and to *Thelidium* Massal. in the which the ascospores remain colourless and usually have only transverse septa.

In the late nineteenth century several corticolous species of *Polyblastia* were described, mostly from Queensland, by C. Knight, A. von Krempelhuber and J. Müller. Subsequently, Zahlbruckner (1921) transferred these taxa to his new and unrelated genus, *Polyblastiopsis* Zahlbr.

Zahlbruckner's genus may be inappropriate for some or all of the Australian taxa (McCarthy 1991a) currently attributed to it. In any case, *Polyblastia* is virtually unknown in the Southern Hemisphere and its occurrence in Australia was only recently confirmed when the calcicolous *P. cupularis* Massal. was reported from south-western Victoria (McCarthy 1991b). In the present contribution, *P. australis*, a new bryophilous and terricolous species, the aquatic *P. cruenta* and the calcicolous *P. dermatodes* are reported from Tasmania.

THE SPECIES

Polyblastia australis P.M. McCarthy sp. nov.

Thallus terricola et muscicola, effusus, pallidogriseus vel pallido griseoviridis, 30–60 µm crassus, ecortatus. Perithecia simplicia, plerumque superficialia, obpyriformia, nigra, (0.42–)0.52(–0.65) mm diametro. Excipulum externe fuscoatrum, interne pallidum. Periphyses 30–70 µm longae. Asci 8-spori, 90–125 × 35–45 µm. Ascospores submuriformes, pallidofuscae, (30–)45(–56) × (13–)17(–22) µm.

TYPUS: Australia, Tasmania, Vale of Belvoir, 5 km NE of Mayday Mount, near Vale R., 41°33'S, 146°53'E, alt. 850 m, on soil and moribund bryophytes in shallow crevices in a limestone outcrop, 21 May 1993, P.M. McCarthy 645 & G. Kantvilas (HOLOTYPE: MEL 1057496; ISOTYPE: HO).

Thallus terricolous and overgrowing moribund bryophytes, granular, effuse, matt, uneven, pale grey to pale grey-green, becoming vivid green when wetted, 30–60 µm thick, ecorticate. *Algae* green, globose, 6–10 µm diam. *Hyphae* 2–4 µm wide. *Prothallus* not apparent. *Perithecia* semi-immersed to superficial and attenuated at the base, numerous, lacking an involucrellum, dull black, obpyriform, with a minutely uneven surface, (0.42–)0.52(–0.65) mm diam. *Perithecial apex* usually somewhat flattened. *Ostiole* apical, in a shallow, 40–60 µm wide depression. *Centrum* globose to obpyriform, 0.25–0.45 mm diam. *Excipulum* brown-black in its outer half, becoming paler within, 40–70 µm thick at the base and sides, 60–90 µm thick near the apex. *Paraphyses* absent. *Periphyses* richly branched, 30–70 µm long. *Hymenial gel* Lugol's I+red-

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brown. *Asci* fissitunicate, clavate, 8-spored, $90\text{--}125 \times 35\text{--}45 \mu\text{m}$. *Ascospores* submuriform, pale brown at maturity, broadly ellipsoid to elongate-ellipsoid or elongate-fusiform, with 6–9 transverse septa, each loculus with (0–)1(–2) longitudinal or diagonal septa, $(30\text{--})45\text{--}(56) \times (13\text{--})17\text{--}(22) \mu\text{m}$ (80 measured); cell contents granulose, usually monoguttulate. (Figs 1 & 2)

REMARKS

This lichen is characterised by its substratum-preference, the thin, diffuse thallus, prominent and moderately large, obpyriform perithecia, 8-spored asci and pale brown, submuriform ascospores. Among other terricolous-bryophilous species, the Eurasian *P.*

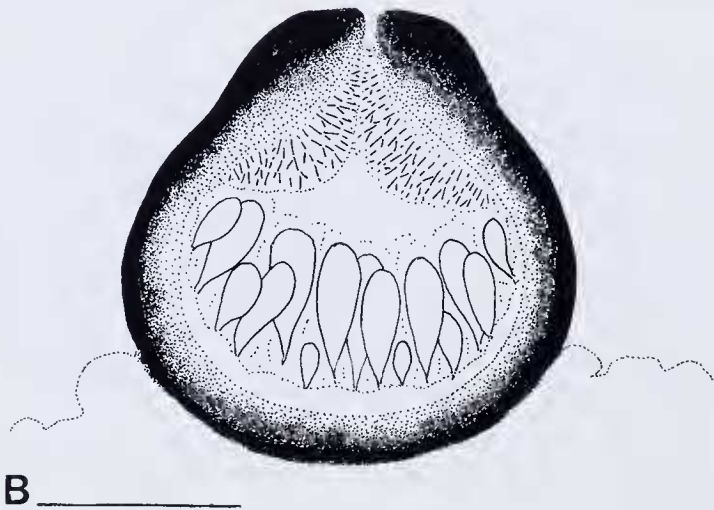
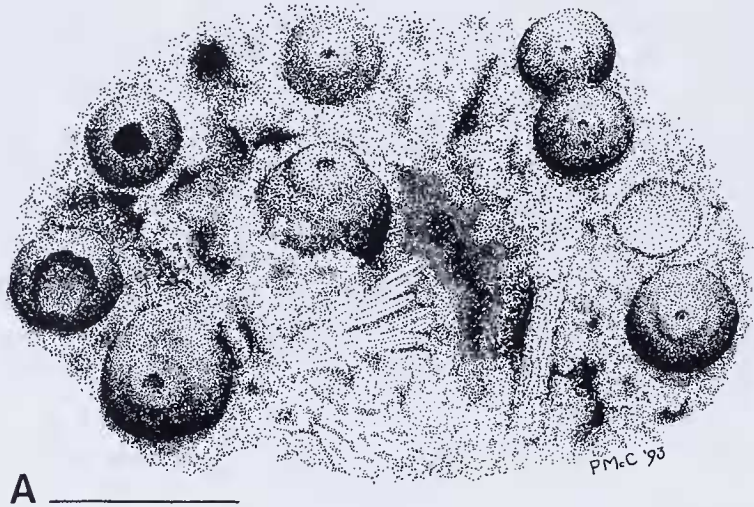


Fig. 1. *Polyblastia australis* (holotypus). a — habit of thallus and perithecia; scale 1 mm. b — vertical section of perithecium; scale 0.2 mm.

gelatinosa (Ach.) Th. Fr. has a darker thallus and discontinuously smaller and more deeply immersed perithecia (Swinscow 1971, Purvis *et al.* 1992). The ascospores of *P. rouxiana* Vězda & Vivant become dark brown at maturity, the perithecia remain immersed and the thallus is blue-green and verruculose (Vězda & Vivant 1973), and, whereas the thalline morphology of the central European *P. philaea* Zschacke is similar to that of the Australian taxon, the perithecia are more deeply immersed, have an involucrellum enclosing the excipulum and ascospores that are fully muriform (Zschacke 1933, Wirth 1980).

Polyblastia australis is similar in appearance to *Agonimia tristicula* (Nyl.) Zahlbr. which is known from Europe and Macaronesia (Purvis *et al.* 1992) and has recently been reported from similar habitats in New South Wales (McCarthy 1991c). However, *Agonimia* has a minutely squamulose or granular thallus, a pseudoparenchymatous cortex with a papillose uppermost layer (clearly seen in *A. tristicula*) and a 3-layered perithecial wall.

The new lichen is currently known only from its type locality in northern Tasmania. It grows mainly on soil and detritus in shallow crevices of limestone outcrops and is associated with *Verrucaria* sp. and *Collema* sp.

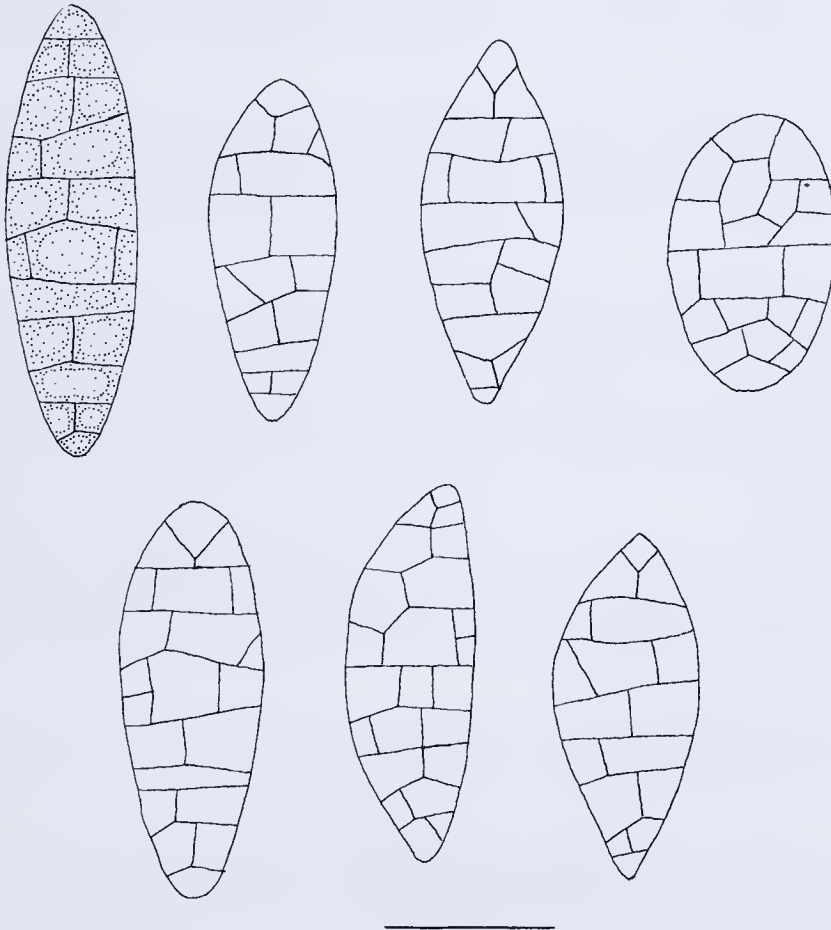


Fig. 2. *Polyblastia australis* (holotypus), ascospores; scale 20 μ m.

Polyblastia cruenta (Körber) P. James & Swinscow, *Lichenologist* 5: 110 (1971).

The thallus of *P. cruenta* is medium to dark grey-brown or greenish black, epilithic, continuous to sparingly rimose and 30–60 µm thick. When wetted it becomes rather gelatinous. Perithecia are very numerous, hemispherical to subglobose, usually covered by a thin thalline layer and (0.46–)0.66(–0.92) mm diam. The involucrellum has a black outer layer, but is hyaline to pale greenish brown within. The asci are broadly clavate, 8-spored and 170–220 × 75–90 µm, and the ascospores are muriform, ellipsoid, hyaline to pale brown and 52–81 × 31–42 µm.

Polyblastia cruenta is one of the more readily recognisable of aquatic pyrenocarpous lichens. Most other species are thin, dark, with inconspicuous perithecia and tend to be difficult to observe in the field, especially when wet. By contrast, the large prominent perithecia of *P. cruenta* allow it to be identified by touch, even when submerged. It is known from aquatic siliceous rocks in Arctic Eurasia and from upland and alpine areas of central Europe, the British Isles and North America (Swinscow 1971, Wirth 1980, Egan 1987, Purvis *et al.* 1992). The discovery of this otherwise boreal lichen in Tasmania follows that of the aquatic *Staurothele fissa* (Taylor) Zwackh (McCarthy 1993), and while the latter has since been observed in central and eastern Tasmania, neither has been seen on the Australian mainland.

This lichen inhabits aquatic dolerite boulders and bedrock in shaded fast-flowing creeks. It is by far the dominant species in the Arve River locality, west of Geeveston. Elsewhere it is associated with *Hymenelia lacustris* (With.) M. Choisy, *Lichina tasmanica* A. Hensen, *Porina aptrootii* P.M. McCarthy and *Verrucaria hydrela* Ach.

SPECIMENS EXAMINED

Tasmania — Hartz Mtns. Arve Falls, alt. 760 m, on aquatic dolerite, 19 May 1993, P.M. McCarthy 623 & G. Kantvilas (MEL 1057477); Arve R., by bridge on Arve Road, 8.5 km W of Geeveston, alt. 160 m, on aquatic dolerite boulders, 19 May 1993, P.M. McCarthy 621 & G. Kantvilas (HO, MEL 1057465); Central Plateau, Ouse R. at start of Liawenee Canal, alt. 1080 m, on exposed aquatic dolerite, 20 May 1993, P.M. McCarthy 633 & G. Kantvilas (MEL 1057455); Great Western Tiers, Meander R., alt. c. 760 m, on shaded aquatic dolerite, 22 May 1993, P.M. McCarthy 662 & G. Kantvilas (MEL 1057495).

Polyblastia dermatodes Massal., *Symm. Lich.*: 101 (1855).

The thallus of the Tasmanian specimen of *P. dermatodes* is endolithic in limestone and is outwardly visible as a pale grey to pale yellowish brown area. The 0.3–0.55 mm diam. perithecia are immersed in pits with only their black, plane to convex apices visible. They lack an involucrellum and have a concave to gaping ostiole and an excipulum that is dark brown to black above and concolorous or somewhat paler below. The asci contain 8 colourless, submuriform ascospores measuring 28–52 × 15–22 µm. The latter have 3–5(–7) transverse septa, with most loculi divided by a single longitudinal or diagonal septum.

Prior to the current report, *P. dermatodes* was known only from central and northern Europe (Zschacke 1933, Swinscow 1971, Wirth 1980, Clauzade & Roux 1985, Purvis *et al.* 1992). The Tasmanian specimen inhabits an exposed limestone outcrop in the northern uplands and grows with *Caloplaca* spp., *Placynthium nigrum* (Hudson) S. Gray, *Rinodina* sp., *Thelidium papulare* (Fr.) Arnold, *Verrucaria baldensis* Massal. *V. papillosa* Ach. and *V. nigrescens* Pers.

SPECIMEN EXAMINED

Tasmania — Vale of Bellevoir, 5 km NE of Mayday Mount, near Vale R., alt. 850 m, on limestone, 21 May 1993, P.M. McCarthy 699 & G. Kantvilas (MEL 1057502).

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